

Claims

1-11. (Cancelled).

12. (Currently Amended) An apparatus for facilitating the step-wise migration of a telecommunication network containing a Mobile Services Switching Center (MSC) from a mixed circuit-switched and packet-switched network to an all packet switched network comprising:
an access control server connected to at least one base station, said at least one base station being in wireless communication with at least one mobile station, said at least one base station having a circuit-switched connection to said MSC,
~~whereby said access control server facilitates including a signaling interface to manage packetized communications within said telecommunication network independent of said MSC, such that said MSC facilitates~~ only circuit-switched communications within said telecommunication network.

13. Currently amended) A method for providing packetized communications within a telecommunication network having a Mobile Services Switching Center (MSC), said method comprising the steps of:
transceiving a packetized communication between at least one mobile station and at least one base station;
~~processing managing~~, by an access control node within the telecommunication network, said packetized communication, said access control node ~~having a signaling interface and~~ being connected to said at least one base station to transceive said packetized communication bypassing said MSC.

14. (Previously amended) The apparatus according to claim 12, wherein said at least one mobile station comprises a mixture of legacy mobile stations and all-packetized mobile stations.

15. (Previously amended) The apparatus according to claim 12, further comprising:
a Packet Authentication Center (PAC) in communication with said access control server.

16. (Previously amended) The apparatus according to claim 15, wherein said PAC contains subscriber profiles for authentication and authorization of packet data.

17. (Previously amended) The apparatus according to claim 12, wherein said network further comprises:
a home location register (HLR) in communication with said MSC.

18. (Previously amended) The apparatus according to claim 12, wherein said network further comprises:
a packet data service network (PDSN) in communication with said base station.

19. (Previously amended) The apparatus according to claim 18, wherein said network further comprises:
a home agent unit (HA) and an authorization, authentication, and account unit (AAA) in communication with said PDSN.

20. (Previously amended) The apparatus according to claim 12, wherein said network further comprises:
a packet data service network (PDSN) and an authorization, authentication, and accounting unit (AAA) in communication with said access control server.

21. (Previously amended) The apparatus according to claim 20, further comprising:
a migratory interface to enable synchronization between said access control server and said
MSC.

22. (Previously amended) The apparatus according to claim 20, wherein said PDSN is in
communication with said base station via a packet control function.

23. (Previously amended) The apparatus according to claim 12, wherein said access control
server maintains and updates a subscriber packet service subscription profile and actual packet
session characteristics.

24. (Previously amended) The apparatus according to claim 12, wherein said access control
server is responsible for bearer control and mobility management associated with packet
services.

25. (Previously amended) The apparatus according to claim 12, wherein said MSC center
maintains control and handling procedures for said circuit-switched communications.

26. (Previously amended) The apparatus according to claim 12, wherein said network
comprises a code division multiple access wireless telecommunications network.

27. (Currently amended) A packet data service access monitor for a wireless communication system, comprising:

a packet authentication center (PAC) configured to maintain a packet service profile for each of a plurality of mobile devices in the wireless communication system; and
an access control server (ACS) having a signaling interface and communicatively coupled with the PAC, the ACS configured to manage packet data services for the plurality of mobile devices based, at least in part, on their respective packet service profiles.

28. (Previously amended) The packet data service access monitor of claim 27, wherein the PAC and the ACS communicate over an Internet protocol (IP)-based communication link.

29. (Previously amended) The packet data service access monitor of claim 27, wherein the ACS uses the packet service profiles to authenticate mobile devices in the plurality of mobile device.

30. (Previously amended) The packet data service access monitor of claim 27, the wireless communication system comprising a plurality of bearers associated with different packet data services, wherein the ACS provides bearer control and mobility management for the respective mobile devices.

31. (Currently amended) A wireless communication system, comprising:

- a packet data carrier;
- a plurality of mobile devices configured to communicate packet data over the packet data carrier;
- a base station configured to communicate with the respective mobile devices over the packet data carrier; and
- a packet data service access monitor, the packet data service access monitor comprising
 - a packet authentication center (PAC) configured to maintain a packet service profile for each of the plurality of mobile devices, and
 - an access control server (ACS) including a signaling interface and communicatively coupled with the PAC and the base station, the ACS configured to manage packet data services for the plurality of mobile device based, at least in part, on their respective packet service profiles.

32. (Previously amended) The wireless communication system of claim 31, wherein the ACS and the base station communicate over an Internet protocol (IP)=based communication link.

33. (Previously amended) The wireless communication system of claim 31, wherein the packet data includes packetized voice data.

34. (Previously amended) The wireless communication system of claim 31, wherein the ACS is configured to track and maintain a session profile for each packet data communication involving a respective mobile device.

35. (Currently Amended) The wireless communication system of claim 31, wherein the packet data carrier comprises a plurality of bearers associated with a plurality of packet data services, and wherein the mobile devices are configured to use the plurality of bearers to access the plurality of packet data ~~servers~~ services.

36. (Previously amended) The wireless communication system of claim 35, wherein the mobile devices are configured to switch from a first packet data service associated with a first bearer to a second packet data service associate with a second bearer, and wherein the ACS is configured to manage handoffs of the respective mobile devices from the first bearer to the second bearer.

37. (Currently amended) A communication system employing packetized communications for voice and data transmissions, the communication system comprising:

a code division multiple access wireless communication network having a mobile station and a base transceiver station configured to support wireless packetized communications therebetween;

an access control server in communication with the base transceiver station; and

~~packet service means, within the access control server, for servicing and including a~~

signaling interface to manage the wireless packetized communications.

38. (Previously amended) The telecommunications system of claim 37, further comprising:

a mobile services switching center in communication with the base transceiver station, the mobile services switching center servicing circuit-switched communications with the mobile station within the code division multiple access communication network.

39. (Previously amended) The communication system of claim 38, wherein the circuit-switched communications with the mobile services switching center comprise voice only communications.

40. (Previously amended) The communication system of claim 38, further comprising a home location register (HLR) in communication with the mobile services switching center.

41. (Previously amended) The communication system of claim 38, further comprising a migratory interface to enable synchronization between the access control server and the mobile services switching center.

42. (Previously amended) The communication system of claim 37, wherein the packet service means within the access control server services packet-switched data only communications with the mobile station within the code division multiple access communication network.

43. (Previously amended) The communication system of claim 37, wherein the access control server is an Internet Protocol (IP) entity comprising means therein for setting up and maintaining at least one packet data session.

44. (Previously amended) The communication system of claim 37, further comprising a Packet Authentication Center (PAC) in communication with the access control server.

45. (Previously amended) The communication system of claim 37, wherein the PAC contains subscriber profiles for authentication and authorization of packet data.

46. (Previously amended) The communication system of claim 37 further comprising a packet data service network (PDSN) in communication with the base transceiver station.

47. (Previously amended) The communication system of claim 46, further comprising a home agent unit (HA) and an authorization, authentication, and account unit (AAA) in communication with the PDSN.

48. (Previously amended) The communication system of claim 46, wherein the PDSN is in communication with the base transceiver station via a packet control function.

49. (Previously amended) The telecommunication system of claim 37, further comprising a packet data service network (PDSN) and an authorization, authentication, and accounting unit (AAA) in communication with the access control server.

50. (Previously amended) The communication system of claim 37, wherein the access control server maintains and updates a subscriber packet service subscription profile and actual packet session characteristics.

51. (Previously amended) The communication system of claim 37, wherein the access control server is responsible for bearer control and mobility management associated with packet services.

52. (Previously amended) A method of mobile communication employing a mobile device, the mobile device configured for circuit switched communication and packet data communication in a wireless communication system comprising a circuit switched network and a packet data network, the method comprising:

generating a registration request at the mobile device, the registration request comprising

 circuit switched specific parameters and packet data specific parameters;

generating a registration message based on the circuit switched specific parameters in the registration request;

transmitting the registration message to the circuit switched network;

authenticating the mobile device in the circuit switched network based on the registration message;

generating an authentication message from the packet data specific parameters in the registration request;

transmitting the authentication message to the packet data network; and

authenticating the mobile device in the packet data network based on the authentication message.

53. (Previously amended) The method of claim 52, further comprising

the mobile device sending a packet data session request to the packet data network;

the packet data network authorizing the packet data session request based on a packet service profile associated with the mobile device;

the mobile device accessing a traffic channel in the packet data network; and

the mobile device opening an R-P connection over the traffic channel for the packet data session.

54. (Previously amended) The method of claim 53, further comprising storing information related to the packet data session request and storing a quality of service profile for the packet data session.

55. (Previously amended) The method of claim 53, further comprising notifying the circuit switched network that a packet data session is active for the mobile device in the packet data network.³⁵

56. (Previously amended) The method of claim 53, further comprising:
receiving an incoming circuit switched communication through the circuit switched network;
the circuit switched network requesting that the mobile device accept the circuit switched communication; and
the mobile device, accessing a traffic channel in the circuit switched network in order to accept the circuit switched communication.

57. (Previously amended) The method of claim 56 further comprising notifying the packet data network that the mobile device is engaged in a circuit switched communication in the circuit switched network.

58. (Currently amended) A method for providing packetized communications within a telecommunications system having a Mobile Services Switching Center (MSC), the method comprising:

transceiving a packetized communication between a mobile station and a base transceiver station;

and processing managing, by an access control server within the telecommunications system, the packetized communication, the access control server including a signaling interface and being connected to the base transceiver station to transceive the packetized communication therebetween, the packetized communication bypassing the MSC.

59. (Previously amended) The method of claim 58, wherein the transceiving step comprises:

transmitting, by the mobile station, the packetized communication to the base transceiver station; and

forwarding, by the base transceiver station, the packetized communication to the access control server, the packetized communication bypassing the MSC.

60. (Previously amended) The method of claim 58, wherein the transceiving step comprises:

receiving, at the access control server, the packetized communication; and

forwarding, by the access control server, the packetized communication to the base transceiver station, the packetized communication bypassing the MSC.